

Appl. No. 10/676,411
Amdt. Dated June 28, 2006
Reply to Office action of March 31, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method comprising:
forming a resist using including a baseline material added by a highly absorbing material selected from fluorine (F), tin (Sn), bismuth (Bi), cesium (Cs), antimony (Sb), a fluoropolymer, a metallocene polymer, an alkoxide chelate polymer, and a carboxylate chelate polymer;
thinning the resist to a pre-determined thickness used as an imaging layer; and
improving efficiency of a photoactive acid generator (PAG) to capture secondary electrons produced by an ionizing radiation in the resist.
2. (currently amended) The method of claim 1 wherein forming the resist comprises:
forming the resist using the baseline material being polyhydroxystyrene a highly absorbing material selected from fluorine (F), tin (Sn), bismuth (Bi), cesium (Cs), and antimony (Sb).
3. (currently amended) The method of claim [[2]] 1 wherein forming the resist comprises:
adding a percentage in volume at least one of the fluorine (F), tin (Sn), bismuth (Bi), cesium (Cs), and antimony (Sb) into [[a]] the baseline material, the percentage ranging from 10% to 20%.
4. (currently amended) The method of claim [[2]] 1 wherein forming the resist comprises:
~~forming the resist using~~ adding a percentage in volume at least one of [[a]] the fluoropolymer, [[a]] the metallocene polymer, an the alkoxide chelate polymer, and [[a]] the carboxylate chelate polymer, the percentage ranging from 10% to 20%.
5. (original) The method of claim 1 wherein thinning comprises:

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thinning the resist to a thickness below 100 nm.

6. (original) The method of claim 1 wherein improving comprises:
increasing a PAG concentration in the resist.

7. (original) The method of claim 1 wherein improving comprises:
controlling moieties proximal to a cleavable bond in the PAG.

8. (original) The method of claim 1 further comprising:
exposing the resist with a radiation being one of an extreme ultraviolet (EUV), X-ray,
electron beam, and ion beam.

9. (currently amended) A method comprising:
forming an imaging layer from a resist made of a baseline material added by a highly
absorbing material selected from fluorine (F), tin (Sn), bismuth (Bi), cesium (Cs), antimony (Sb),
a fluoropolymer, a metallocene polymer, an alkoxide chelate polymer, and a carboxylate chelate
polymer, the layer being thinned to a pre-determined thickness, the layer having improved
efficiency of a photoactive acid generator (PAG) to capture secondary electrons produced by an
ionizing radiation; and
forming an etch resistant layer below the imaging layer for pattern transfer from the
imaging layer.

10. (currently amended) The method of claim 9 wherein the baseline material is
polyhydroxystyrene ~~highly absorbing material is selected from fluorine (F), tin (Sn),
bismuth (Bi), cesium (Cs), and antimony (Sb).~~

11. (currently amended) The method of claim ~~10~~ 9 wherein forming the imaging
layer comprises:
adding to ~~[[a]]~~ the baseline material by a percentage in volume at least one of the fluorine
(F), tin (Sn), bismuth (Bi), cesium (Cs), and antimony (Sb), the percentage ranging from 10% to
20%.

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12. (currently amended) The method of claim ~~10~~ 9 wherein ~~the imaging layer is made forming the imaging layer~~ comprises adding to the baseline material by a percentage in volume at least one of ~~the fluoropolymer, the metalocene polymer, an alkoxide chelate polymer, and the carboxylate chelate polymer, the percentage ranging from 10% to 20%.~~
13. (original) The method of claim 9 wherein the thickness is below 100 nm.
14. (original) The method of claim 9 wherein the imaging layer has an increased PAG concentration.
15. (original) The method of claim 9 wherein the imaging layer has controlled moieties proximal to a cleavable bond in the PAG.
16. (original) The method of claim 11 further comprising:
exposing the imaging layer to a radiation being one of an extreme ultraviolet (EUV), X-ray, electron beam, and ion beam.
17. (currently amended) A device comprising:
an imaging layer made of a baseline material added by a highly absorbing material selected from fluorine (F), tin (Sn), bismuth (Bi), cesium (Cs), antimony (Sb), a fluoropolymer, a metallocene polymer, an alkoxide chelate polymer, and a carboxylate chelate polymer, the layer being thinned to a pre-determined thickness, the layer having improved efficiency of a photoactive acid generator (PAG) to capture secondary electrons produced by an ionizing radiation; and
an etch resistant layer below the imaging layer for pattern transfer from the imaging layer.
18. (currently amended) The device of claim ~~14~~ 17 wherein the baseline material is polyhydroxystyrene ~~highly absorbing material is selected from fluorine (F), tin (Sn), bismuth (Bi), cesium (Cs), and antimony (Sb).~~

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19. (currently amended) The device of claim ~~12~~ 17 wherein the imaging layer comprises:

~~a baseline material added by a percentage in volume of~~ at least one of the fluorine (F), tin (Sn), bismuth (Bi), cesium (Cs), and antimony (Sb), the percentage ranging from 10% to 20%.

20. (currently amended) The device of claim ~~12~~ 17 wherein the imaging layer ~~is made by~~ comprises a percentage in volume of at least one of a fluoropolymer, a metallocene polymer, an alkoxide chelate polymer, and a carboxylate chelate polymer, the percentage ranging from 10% to 20%.

21. (original) The device of claim 11 wherein the thickness is below 100 nm.

22. (original) The device of claim 11 wherein the imaging layer has an increased PAG concentration.

23. (original) The device of claim 11 wherein the imaging layer has controlled moieties proximal to a cleavable bond in the PAG.

24. (original) The device of claim 18 wherein the imaging layer is exposed with the radiation being one of an extreme ultraviolet (EUV), X-ray, electron beam, and ion beam.